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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,724	02/20/2004	Uwe Dahlmann	2003DE408	6630

7590 10/12/2006

Clariant Corporation  
Industrial Property Department  
4000 Monroe Road  
Charlotte, NC 28205

EXAMINER
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GOLOBOY, JAMES C

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,724	<b>Applicant(s)</b> DAHLMANN ET AL.	
	<b>Examiner</b> James Goloboy	<b>Art Unit</b> 1714	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/18/2004 and 1/18/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 10 requires D to include heteroatoms, but the current language of Claim 1 does not allow for D to include heteroatoms. It is the examiner's recommendation that the phrase "which may contain one or two heteroatoms" be reinstated in Claim 1, or that Claim 10 be rewritten in independent form.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Claim 1 claims a quaternary ammonium cation, but no counteranion. The cation itself only exists under certain conditions, such as where a salt of the compound has dissociated in solution, which are not disclosed in the specification.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Vartanian (U.S. Pat. No. 4,171,959).

Vartanian, in the abstract, discloses a quaternary ammonium salt of a succinimide. In column 1 61-62 Vartanian teaches that R" and R'" (corresponding to R<sup>3</sup> and R<sup>4</sup> in the present application) are C<sub>1</sub>-C<sub>6</sub> hydrocarbon radicals, falling within the ranges recited in Claims 1 and 2. In column 2 lines 56-58 Vartanian teaches that R' may be a straight chain hydrocarbon, in which case R<sup>2</sup> in the present application is a hydrogen as recited in Claim 3, and also that R' has from 2 to 6 carbon atoms, falling within the range recited in Claim 4. The salt disclosed by Vartanian therefore meets Claims 1-4 for the case where m = 0.

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The succinimide group of Vartanian is substituted with a hydrocarbon group R. In column 2 lines 51-53 Vartanian discloses a preferred molecular weight range of 325 to 425 for the hydrocarbon group, which would give it between 1 and 100 carbons as recited in Claim 6.

3. Claims 7 and 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Kamijukkoku (JP 05193073 A).

Kamijukkoku, in figure VI, depicts a compound where quaternary ammonium salts of succinimides are connected by a hydrocarbon backbone, effectively forming the R<sup>6</sup> substituent as recited in Claim 8. There are at least 3 carbons in the chain (the B group of Claim 8) connecting the succinimide units, falling within the range of Claim 8. Additionally, the succinimide group within the R<sup>6</sup> substituent contains nitrogens, which are heteroatoms as recited in Claim 7.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vartanian in view of Chou (U.S. Pat. No. 4,329,239).

The discussion of Vartanian in paragraph 2 above is incorporated here by reference. Vartanian discloses a quaternary ammonium salt containing a succinimide unit as a fuel or lubricant additive for the purpose of reducing deposits. Vartanian does not disclose a compound where D contains a heteroatom, as in Claim 10.

Chou, in the abstract, discloses a hydrocarbyl-substituted dihydrouracil lubricant additive, and in column 1 lines 57-59 teaches that the additive is useful for reducing deposits. The dihydrouracil of Chou contains a heteroatom (nitrogen) in the D group of Claim 10.

It would have been obvious to one of ordinary skill in the art to replace the succinic group of Vartanian with the dihydrouracil group of Chou as the dihydrouracil compound also provides deposit-reducing properties, as taught by Chou.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vartanian in view of Voogd (U.S. Pat. No. 3,818,876).

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The discussion of Vartanian in paragraph 5 above is incorporated here by reference. Vartanian discloses a quaternary ammonium salt containing a succinimide unit as a fuel or lubricant additive for the reduction of deposits. While Vartanian discloses the use of the additive in a hydrocarbon mixture, Vartanian does not teach the use of the additive in a mixture of hydrocarbon and water.

Voogd, in column 1 lines 29-34, discloses a fuel that is a mixture of gasoline (hydrocarbons) and water. From column 2 line 67 through column 3 line 5, Voogd teaches that the composition contains up to 1% of a surfactant. Quaternary ammonium salts, such as that taught by Vartanian, are surfactants, and the range of up to 1% disclosed by Voogd encompasses the range recited in Claim 9.

It would have been obvious to one of ordinary skill in the art to add the quaternary ammonium salt of Vartanian in the hydrocarbon and water fuel composition of Voogd, in order to reduce deposit formation as taught by Vartanian, or in order to maintain a stable water/gasoline emulsion, as taught by Vartanian.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vartanian in view of Carlisle (U.S. Pat. No. 5,439,603) and Chevron (<http://web.archive.org/web/20010625104005/http://www.chevron.com/prodserv/fuels/techrongas/faq.shtml>)

The discussion of Vartanian in paragraph 5 above is incorporated here by reference. Vartanian discloses a quaternary ammonium salt containing a succinimide unit which satisfies the limitations of Claim 1 where  $m = 0$ , and is useful as a fuel or

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lubricant additive for the reduction of deposits. Vartanian does not disclose a salt where  $m$  is between 1 and 30, as recited in Claim 5.

Carlisle, in column 2 (Figure I) discloses a succinimide dispersant additive, which reduces deposits. From column 2 line 44 through column 3 line 9, Carlisle teaches that the  $R^2$  group in figure I may be an alkylene (column 2 lines 47, 68) or a polyether (column 3 line 3). Chevron (see outlined portion) teaches that polyether amines are particularly effective fuel additives for the reduction of deposits. Therefore, it would be desirable to choose a polyether as the  $R^2$  group of Carlisle in order to obtain the best dispersancy. The succinimide taught by Carlisle and Chevron therefore differs from the compound recited in Claim 5 only in that it contains a tertiary amine rather than a quaternary ammonium as required in the currently presented claim.

Attention is drawn to column 6 lines 16-32 (Table I) of Vartanian, which compares the deposit-reducing effectiveness of quaternized ammonium salts containing succinimide units to that of the corresponding tertiary amines. Specifically, the quaternary salts of Runs 3 and 5 exhibit deposit-reducing effectiveness far superior to that of the corresponding tertiary amines of Runs 2 and 4. Therefore, it would have been obvious to quaternize the additive of Carlisle and Chevron, forming the compound recited in Claim 5, in order to further increase the deposit reducing capability of the compound.

### ***Conclusion***



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9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hammond (U.S. Pat. 4,326,973) discloses a quaternary ammonium succinimide salt.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Goloboy whose telephone number is 571-272-2476. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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